

Appl. No. 10/785,995

Docket No. MEI-102

Amendment

Response to Final Office Action mailed August 3, 2007

REMARKS**Pending Claims**

Claims 35 - 46 are pending in this application. Claims 19 - 34 have been canceled without prejudice or disclaimer. New claims 35 - 46 have been added. No new matter has been added.

Claim Rejections under 35 U.S.C. §103

Claims 19, 21-23, 25, 28-31 and 33 are rejected under 35 U.S.C. §103(a) as being unpatentable over Dettinger et al., U.S. Publication No. 2003/0093413, in view of Pherson et al, U.S. Patent Publication No. 2002/0095602. Claim 20 is rejected under 35 U.S.C. §103(a) as being unpatentable over Dettinger in view of Pherson and further in view of Pudipeddi et al, U.S. Publication No. 2002/0147881. Claims 26 and 34 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Dettinger in view of Pherson et al, and further in view of Jones et al., U.S. Publication No. 2002/0169794.

Applicants have canceled claims 19-23, 25, 26, 28-31, 33 and 34 without prejudice or disclaimer. New claims 35-46 have been added to set forth that which applicants regard as the invention. The added claims are patentable over Dettinger in view of Pherson and the remainder of the art of record for the following reasons.

As shown in Figure 1, there is a network of control nodes CN1, CN2 and CN3, for example, each having a client computer (CLN) and a storage node (SN) controlled by the respective control node. Figure 1 shows a user "foo" who first uses a client CLN1 to send an

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access request for a file "file_1a" that is stored in storage node SN1. Then, "foo" moves to the client CLN3 which is connected to the local area network LAN3. From the client computer CLN3, user "foo" sends an access request for the same file "file_1a" via the control node CN3 to the control node CN1 as shown by the solid line arrow in Figure 1. The file is transferred as shown by the dashed line arrow from the node CN1 to the node CN3. The record of the access shown by the arrows accumulates as an access history, and control node CN1 refers to the access history to extract entries of the access history log related to the requests. If it is determined that the extracted entries from the log regarding the requests reach (or exceed) a predetermined value, then data related to the request of the extracted entries is sent to the storage node SN3 from storage node SN1 by copying or migration of the related data.

Figure 9 shows an access history manager 200 that detects frequent accesses from a control node when the control node accesses the file of another control node. A log of requests is maintained, as shown in Figure 10B, for example, of the source of a request with respect to whether the source is the client computer or another control node.

Applicants have claimed in claim 35 an access control node, e.g. CN1, that is coupled to a client computer (CLN1) and a storage device (SN1) via a network (LAN1). The control module (CPU 100, Fig. 2) is configured to control a request related to data stored in the storage device from a client computer or other control node (CN2, CN3). An analysis module (104) is configured to specify the source of the request (150, 160; Fig. 3) as being the client computer or the other control node. Further, a log module (107, Fig. 4) and a log

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analysis module (103) are claimed. The log analysis module is configured to extract log entries of the requests from the log module having the other control node as the specified source. Further, a data transmit module is claimed that is configured to send data related to the requests of the extracted log entries to the other control node when the other control node is the specified source of the requests of the extracted log entries and the number of the extracted log entries for the requests is a predetermined value (Fig. 6).

In independent claim 42, the computer storage system of the invention is claimed as having a plurality of storage systems including a control device and a storage device, a client computer and a management computer. The control device is configured to control a request related to data stored in the storage device of the respective storage system or other storage systems. The control device transmits the request to the other storage system if the request is related to data stored in the other storage system and accesses the data on the basis of the request if the request is related to data stored in the storage device of the respective storage system. Log entries of the request are stored with the source of the request being specified, which is either the client computer or of the other storage systems, and the log entries related to the request from the other storage system are extracted from the log. In claim 42, the management computer sends data related to the requests of the extracted log entries to the other storage system when the other storage system is the specified source and when the number of the extracted log entries for the requests is a predetermined value.

Applicants have set forth in claim 38 a computer system including a first network system having a first client computer, first control node and a first storage device; and a

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second network system including a second client computer, second control node and second network system including a second client computer, second control node and second storage device. Accordingly to claim 38, a first control node is configured to control a request related to data stored in the first storage device from either the first client computer or the second control node. Log entries of the (first) requests that include the source of the request are stored and log entries are extracted for requests made from the second control node. Data related to the extracted log entries of the first requests is sent to the second control node when the second control node is the specified source of the extracted log entries of the first requests and if the number of the extracted log entries of the first requests is a predetermined value. The second control node of claim 38 is similarly configured, however, in the second node, the second storage device is configured to determine if the received second request is received from a data location in the second storage device or the first storage device. The file position information shown in Fig. 2 (108) is an example of the data location information supporting the claim language of claim 38. In the claim, a request is sent to the first control node, which manages the first storage device, as a first request if the received second request is related to the first storage device, and the second storage device stores the data if the data related to the second request is received from the first control node.

Dependent claims 36, 39 and 43 of the invention set forth that the data transmit module, control node or control device migrates the related data to the other (second) control node or other storage system if there is no request for the related data from the client computer. See page 11, lines 9-10 of the specification.

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Dependent claims 37, 40 and 44 of the invention set forth that the data transmit module, control node or control device copies the related data to the other (second) control node or other storage system if there is no request for the related data from the client computer. See page 11, lines 9-10 of the specification.

According to claims 41 and 45, the source of the request from the client computer is converted to the second control node or other storage system when the received request is related to second control node or other storage system. See Figure 3 which shows conversion of a requesting access having accessor CLN1 (150) converted to accessor CN3 (160), for example.

Claim 46 sets forth a management server coupled to a plurality of the storage systems which is configured to collect logs from a plurality of the storage systems to extract log entries for the requests which are received from the other storage systems and to send an instruction to send, to the other storage system, data related to the request of the extracted log entries.

The pending claims are not obvious in view of Dettinger or the remainder of the art of record. Dettinger discloses a database 104 and server 106 that are included in one apparatus as a server computer 102 or a client computer 120. There are no client computers and no requests from a client computer according to Dettinger. There is only a database in the server computer and a server with a target database in each of the client computers. Accordingly, Dettinger does not disclose or teach the basic arrangement of the computer system or access control node of the invention.

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In Dettinger, data replication is taught when predefined replication thresholds, such as frequency of requests, are met. In Dettinger, if, for a given client, the predefined replication thresholds are met, then one or more tables 107 of the source database 104 are replicated to the client's local system database or target database 128n. However, Dettinger does not disclose the access control node or computer system of the invention.

Pherson is relied upon for disclosing the storage of user IDs to supply identification information to a resource provider.

Pudipeddi, which is applied to the dependent claims, is relied upon for setting forth that data files are migrated when the files have not been used for a certain period of time. However, Applicants claim that the (related) data is copied or migrated depending on whether or not a request for the data has been made from the local or client computer in order to ensure access is available by the local computer without accessing another control node or storage device. See claims 36, 37, 39, 40, 43 and 44. This is not taught or suggested by Pudipeddi. Further, Jones is relied upon for disclosing an Open Shortest Path First Protocol in rejecting dependent claims. However, neither of these references overcomes the deficiencies of Dettinger or Dettinger and Pherson.

Therefore, claims 35 -46 should be found to be patentable over these references and the remainder of the art of record.

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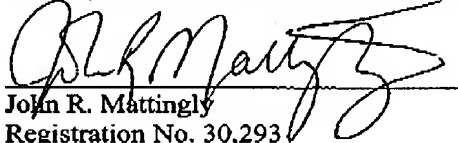
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Conclusion

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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